

WIRELESS TEMPERATURE MONITORING SYSTEMS

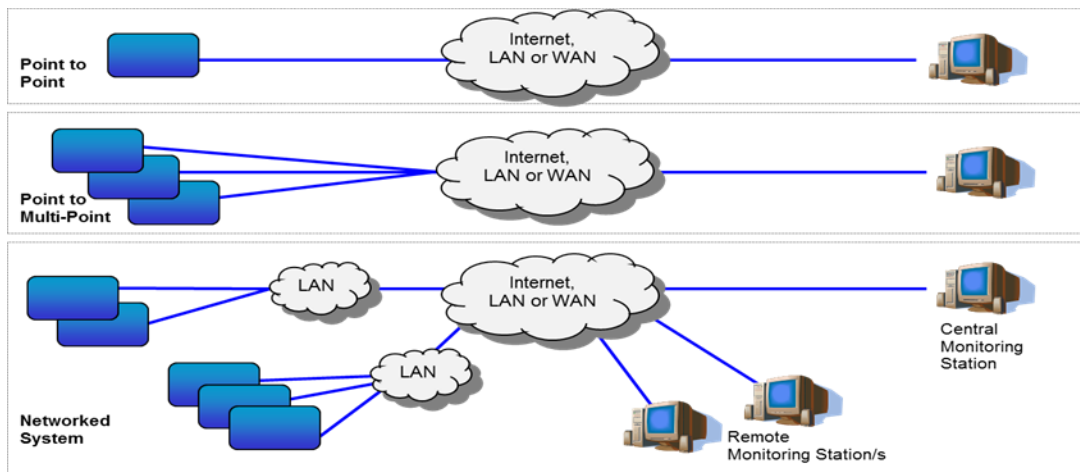
TEMP°TRACK™ BATTERY POWERED WIRELESS SYSTEM

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WIRELESS TEMPERATURE MONITORING SYSTEMS

1 Introduction

The Temp^oTrack™ Battery Powered Wireless System fully automates temperature monitoring and recording 24/7 providing effective cold chain management of temperature sensitive products. Battery power provides flexibility and portability. The wireless loggers can operate as a Point-to-Point Monitoring System by connecting to a computer via a wireless connection for continuous temperature display. As the number of monitoring points increases, the Point-to-Point system can be expanded to a Point-to-Multi Point Monitoring System by introducing additional loggers. Network Systems are available where temperature monitoring is distributed across multiple sites.



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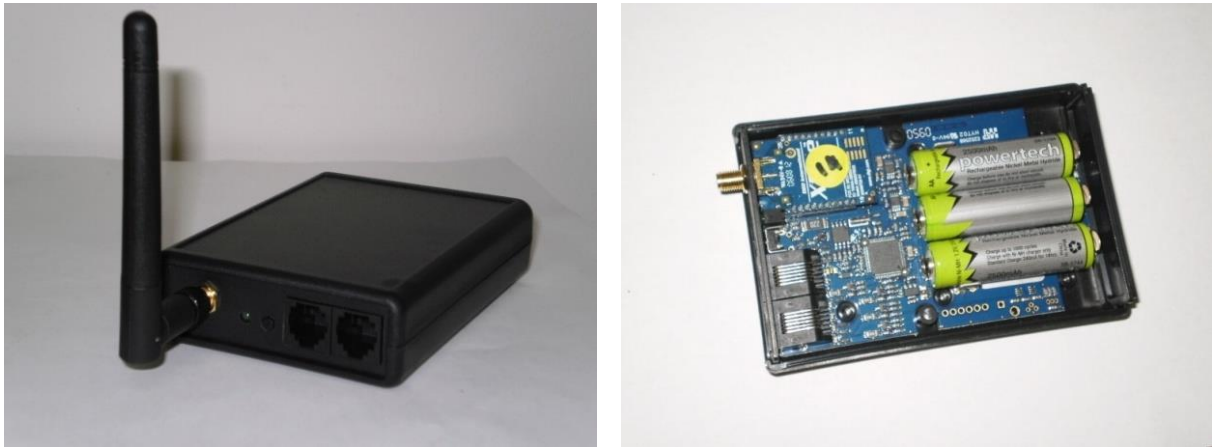
2 Unique Features

- a. The wireless monitoring systems transmit live temperature readings, enabling monitoring of temperature levels and alarm conditions from the logger and the computer(s) simultaneously.
- b. Temperature data is automatically downloaded into a comprehensive software database for storage and retrieval, simplifying record keeping for audit purposes. The software is easy to use and enables immediate visual display of data (current and historical) in graphical form.
- c. The innovative alarm handling allows the setting of upper and lower alarm limits, an alarm delay period and an alarm logging interval. When storage temperatures exceed the limits, alarm data such as alarm start time, duration, min/max temperatures and temperature profile is collected.
- d. Optional alarm alerting enables audible alerting, sms alerting, email alerting, network alerting and SNMP alerting.
- e. The floor plan features allows the user to view the location and status of the system and all monitoring points. All alarming points can be viewed from the floorplan.
- f. Automated report(s) can be configured and PDF report(s) generated to electronic storage or to specified email recipient(s).

WIRELESS TEMPERATURE MONITORING SYSTEMS

3 Battery Powered Wireless Logger (Standard)

Standard Equipment Requirements: Logger/s, Antenna/s, Sensor/s



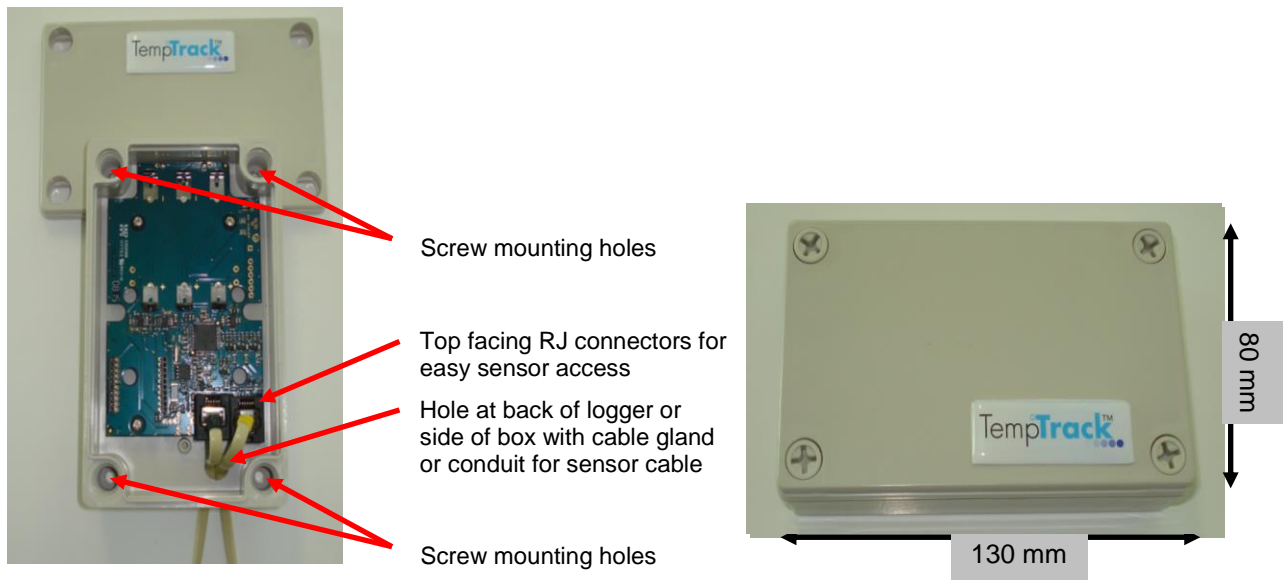
Battery Powered Wireless Logger

- a. The loggers accept a large range of other sensors for monitoring humidity, pressure, voltage, current and RTD.
- b. Each logger supports up to 2 external temperature sensors, an optional internal temperature sensor and an optional humidity sensor. The logger can also accept 2 inputs for monitoring door ajar sensors. Wireless communication to a PC is via a wireless receiver/router. The wireless receiver is assigned an IP address, the PC communicates to the logger via a receiver, and supports up to 10 battery powered loggers directly. Wireless repeaters are required for connecting more than 10 loggers to the same wireless receiver and each wireless repeater supports an additional 12 loggers.
- c. The logger does not have a temperature display but has a LED for alarm alerting. It operates on 3 x AA standard alkaline battery with approximately 1.5 year battery lifespan. Removal and replacement of batteries is a simple process.
- d. Dimensions: L = 110 mm; H = 75 mm; W = 25 mm. Weight: 175g (with batteries).
- e. EMC and Radio Communications Compliance with AS/NZS CISPR 22:2002



4 Battery Powered Wireless Logger (Industrial)

Industrial battery powered loggers are also available which are durable units for heavy duty applications. The Industrial logger retains the same software features as the standard battery powered wireless logger. Dimensions: L=130 mm, H= 80 mm, W=35 mm. Weight: 230g (with batteries)



Industrial battery powered wireless logger

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5 Receiver

Standard Equipment Requirements: Receiver/s, Antenna, Power Cable, Ethernet cable.

The receiver enables wireless communication to a PC. The wireless receiver is assigned an IP address, the PC communicates to the logger via a receiver, and it supports up to 10 battery powered loggers directly.



Power connection

Ethernet port

Antenna connection

Ethernet Wireless Receiver

6 Repeater

Standard Equipment Requirements: Repeater/s, Antenna/s, Power Cable.

The repeater is used to increase wireless range or to support more than 10 loggers to 1 wireless receiver.

Each repeater can support up to 12 additional loggers.



Power connection

LED (light)

Antenna connection

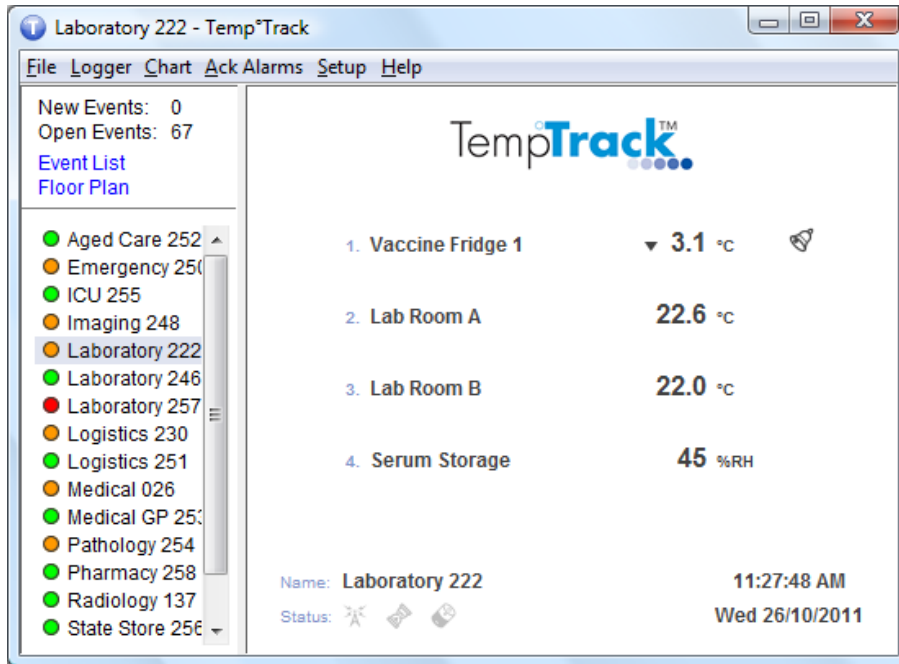
Wireless Repeater

7 PC Software Features

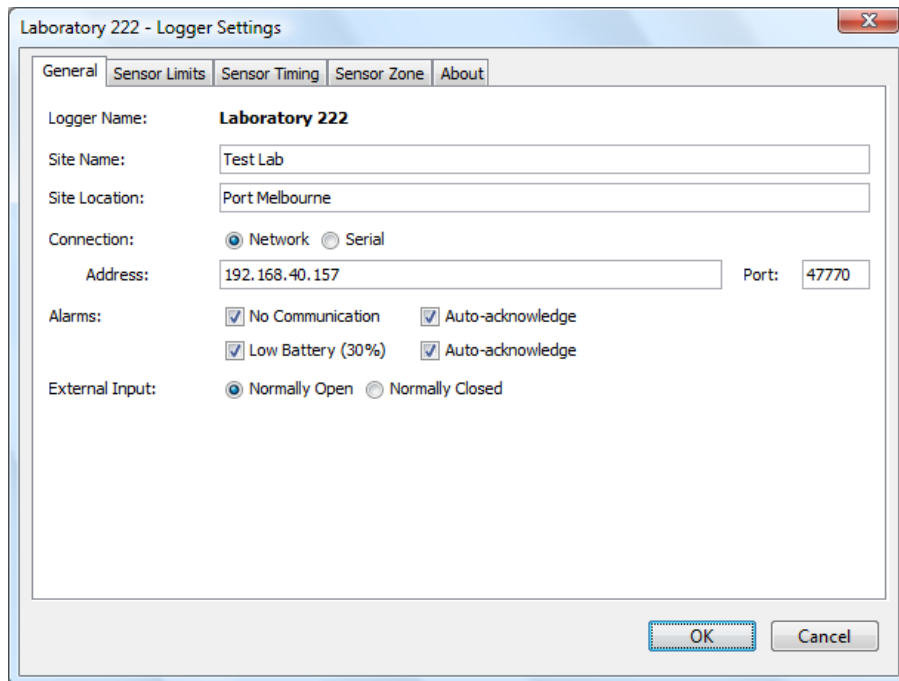
- a. Server – Client architecture to allow live temperature data to be monitored on multiple PC's.
- b. Live temperature display on PC
- c. Graphical display of temperature readings on PC
- d. Alarm tracking and alarm alerting – view alarm lists on PC; alarm alerts sent via email/sms
- e. Comprehensive alarm data – alarm duration, min/max temperature and temperature profile for alarms, and the ability to add notes and comments to alarm events
- f. Floor plan status of all monitoring points
- g. Ability to display daily/weekly/monthly temperature readings
- h. Statistics for min., max., average temperature
- i. Ability to display data in chart form
- j. Report generation, manual and automated.
- k. Comprehensive database for audit purposes – all current and historical data stored in database for retrieval

WIRELESS TEMPERATURE MONITORING SYSTEMS

Main Screen



Logger Settings



WIRELESS TEMPERATURE MONITORING SYSTEMS

Laboratory 222 - Logger Settings

General | **Sensor Limits** | Sensor Timing | Sensor Zone | About

Sensor	Unit	Lower Limit	Upper Limit
Vaccine Fridge 1	°C	10.0	30.0
Lab Room A	°C	10.0	30.0
Lab Room B	°C	10.0	30.0
Serum Storage	%RH	10	90

OK Cancel

Laboratory 222 - Logger Settings

General | Sensor Limits | **Sensor Timing** | Sensor Zone | About

Sensor	In Range		Out of Range	
	Log Interval	Time of Day	Log Interval	Alarm Delay
Vaccine Fridge 1	1 hour	Midnight	2 minutes	30 minutes
Lab Room A	1 hour	Midnight	2 minutes	30 minutes
Lab Room B	6 hours	Midnight	20 minutes	30 minutes
Serum Storage	6 hours	Midnight	20 minutes	30 minutes

OK Cancel

WIRELESS TEMPERATURE MONITORING SYSTEMS

System Settings

X

SMS Alert	Network Alert	SNMP Alert	Status Report	Reminder	Email	SMS
General	Display Units	Audible Alert	Command Alert	Email Alert		

Refresh Interval:

Mains Powered:

Battery Powered:

Low Battery Threshold:

X

General	Display Units	Audible Alert	Command Alert	Email Alert		
SMS Alert	Network Alert	SNMP Alert	Status Report	Reminder	Email	SMS

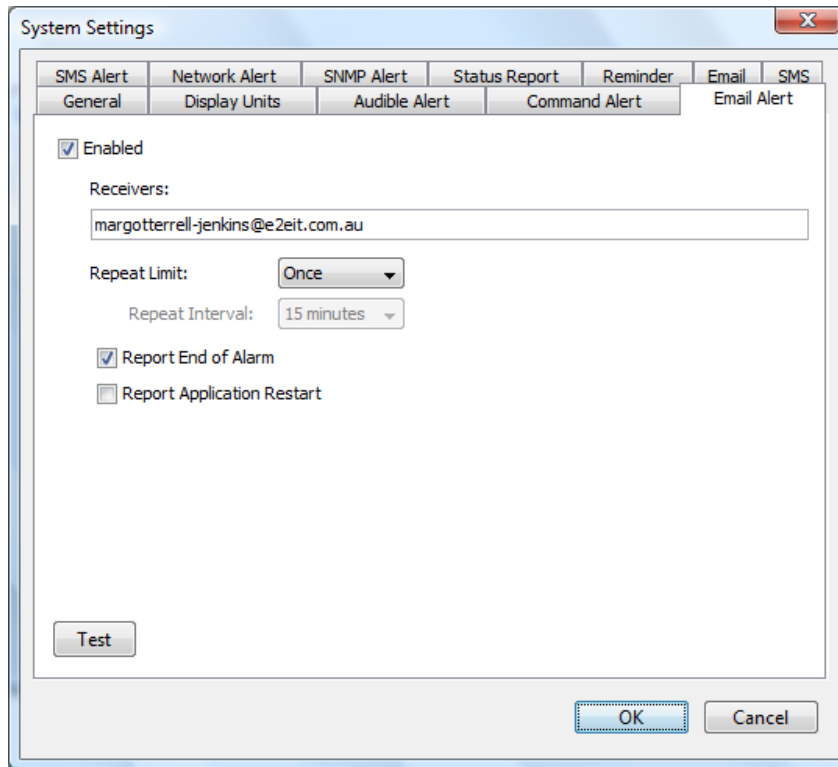
Sender's Email Address:

Outgoing Server (SMTP):

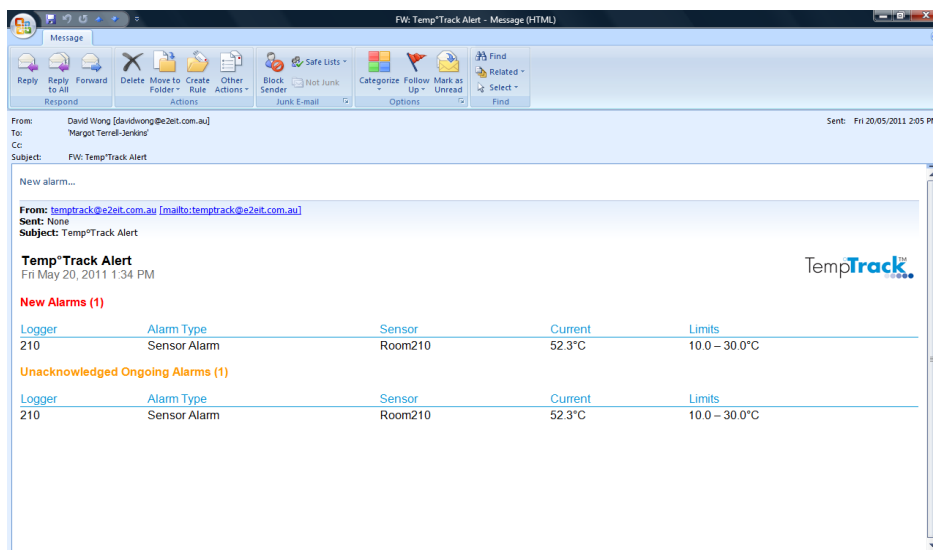
Username:

Password:

WIRELESS TEMPERATURE MONITORING SYSTEMS



Email Alerts



WIRELESS TEMPERATURE MONITORING SYSTEMS

Status Report

System Settings X

General	Display Units	Audible Alert	Command Alert	Email Alert
SMS Alert	Network Alert	SNMP Alert	Status Report	Reminder
			Email	SMS

Enabled

Receiver's Email Address:

Interval:

Time of Day:

TempTrack Status Report - Message (HTML)

From: margotterrell-jenkins@e2eit.com.au
 To:
 Cc: TempTrack Status Report
 Subject: TempTrack Status Report

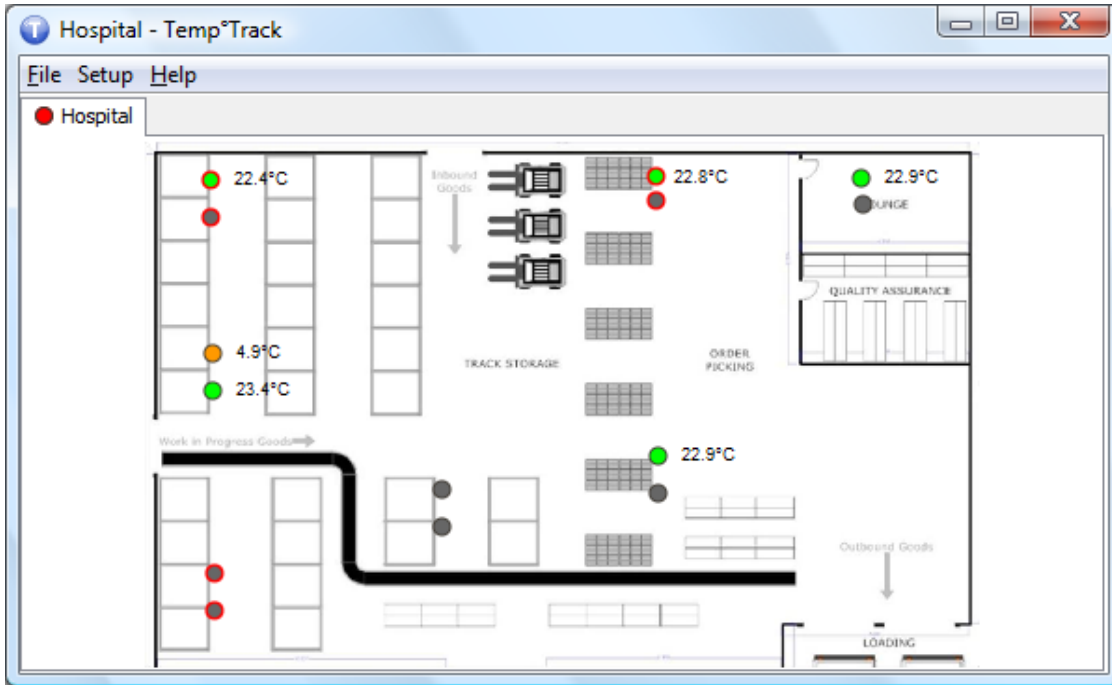
Sent: None

TempTrack Status Report
 Wed Oct 26, 2011 11:45 AM

Logger	Sensor	Reading	State
Aged Care 252	Vaccine Fridge 1 Vaccine Fridge 2	22.4°C	
Emergency 250	Low Battery Vaccine Fridge 1 Vaccine Fridge 2	22.0°C	
ICU 255	Vaccine Fridge 1 Vaccine Fridge 2	22.4°C	
Imaging 248	Vaccine Fridge Imaging Room	4.1°C 23.0°C	Low Alarm
Laboratory 222	Vaccine Fridge 1 Lab Room A Lab Room B Serum Storage	3.1°C 23.1°C 22.4°C 44%RH	Low Alarm
Laboratory 246	Vaccine Fridge 1 Vaccine Fridge 2		
Laboratory 257	No Communication since 11:15:32 AM Wed Oct 26, 2011 Serum Storage Diagnostics		
Logistics 230	Low Battery Vaccine Storage Room	-19.3°C 23.1°C	Low Alarm
Logistics 251	Vaccine Fridge A Vaccine Fridge B	22.3°C	
Medical 026	Low Battery Vaccine Fridge 1	22.5°C	

WIRELESS TEMPERATURE MONITORING SYSTEMS

Floor Plan



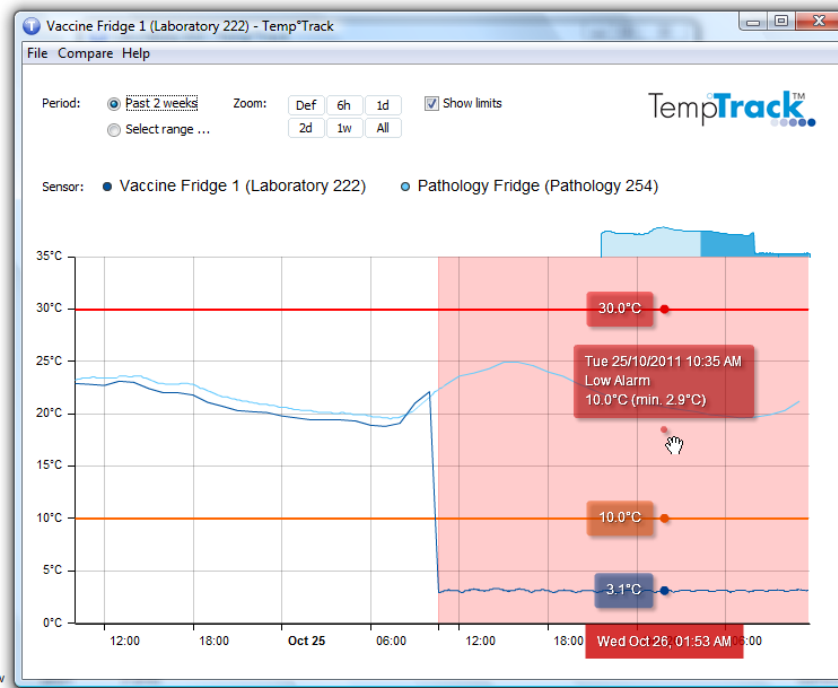
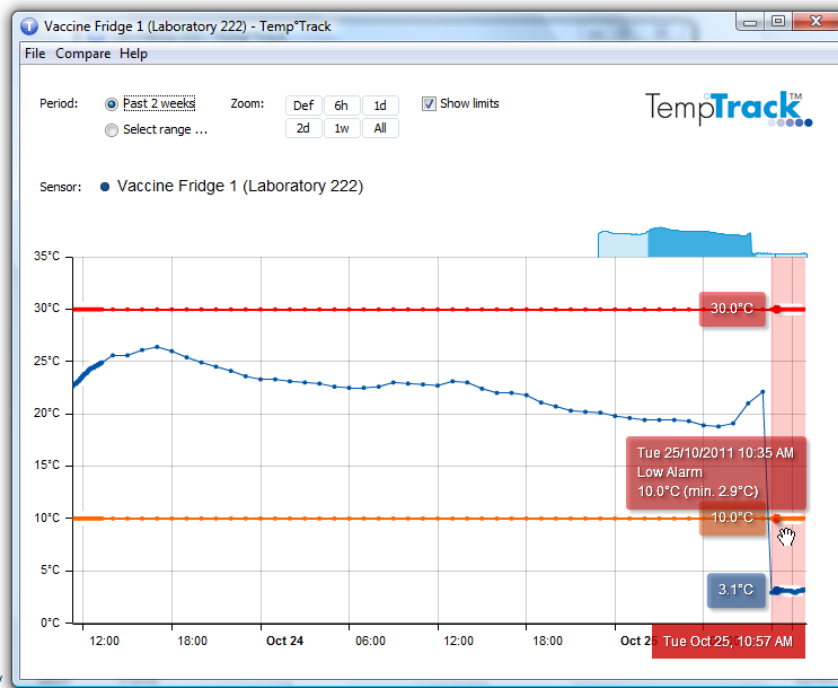
View Events

The screenshot shows a software window titled "Events - TempTrack". It features a menu bar with "File", "Actions", "Ack Alarms", and "Help". Below the menu, there are options for "Period: Past 2 weeks" (selected), "Closed Events", and "Select range ...". The TempTrack logo is visible in the top right. The main area contains a table of events.

State	Start Time	Duration	Logger	Source	Event Type	Details	Comments
●	Tue 25/10/2011 10:...	1 day ...	Imaging 248	Vaccine Fri...	Low Alarm	10.0°C	
●	Tue 25/10/2011 10:...	1 day ...	Logistics 230	Vaccine Sto...	Low Alarm	10.0°C	
●	Mon 24/10/2011 7:...	1 day ...	Emergency ...		Low Battery		
●	Mon 24/10/2011 11:...	2 days ...	Pathology ...		Low Battery		
●	Mon 24/10/2011 6:...	2 days ...	Logistics 230		Low Battery		
●	Mon 17/10/2011 11:...	9 days ...	Medical 026		Low Battery		
●	Tue 25/10/2011 10:...	1 day	Laboratory ...	Vaccine Fri...	Low Alarm	10.0°C (min. 2.9°C)	✓
●	Fri 21/10/2011 11:2:...	Unknown	Pharmacy 258		Low Battery		
●	Fri 21/10/2011 11:2:...	Unknown	Laboratory ...		Low Battery		
●	Thu 20/10/2011 7:5:...	3 days	Pathology ...		Low Battery		
●	Thu 20/10/2011 2:1:...	4 days	Logistics 230	Room	Low Alarm	10.0°C (min. -22....	
●	Thu 20/10/2011 1:0:...	6 hours	Pathology ...		Low Battery		
●	Thu 20/10/2011 12:...	1 hour	Logistics 230		Low Battery		
●	Thu 20/10/2011 12:...	4 minutes	Logistics 230		Low Battery		
●	Thu 20/10/2011 12:...	56 minutes	Pathology ...		Low Battery		
●	Thu 20/10/2011 11:...	8 minutes	Pathology ...		Low Battery		
●	Thu 20/10/2011 10:...	2 minutes	Pathology ...		Low Battery		
●	Thu 20/10/2011 10:...	4 minutes	Logistics 230		Low Battery		
●	Thu 20/10/2011 10:...	2 minutes	Pathology ...		Low Battery		
●	Thu 20/10/2011 10:...	6 minutes	Logistics 230		Low Battery		
●	Thu 20/10/2011 10:...	4 minutes	Pathology ...		Low Battery		

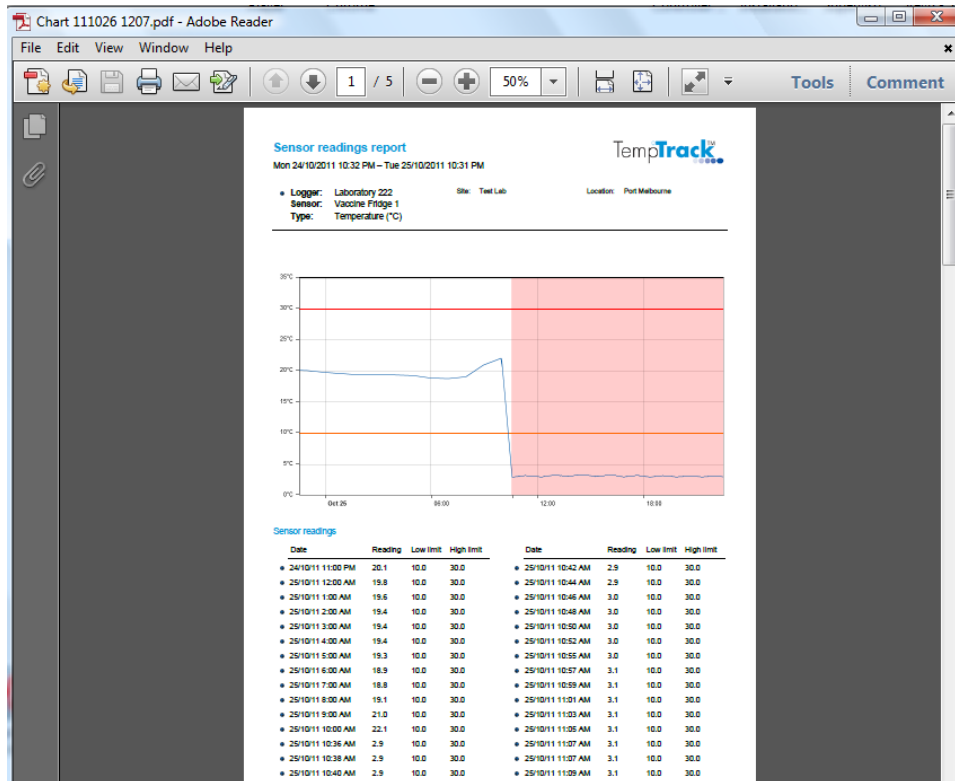
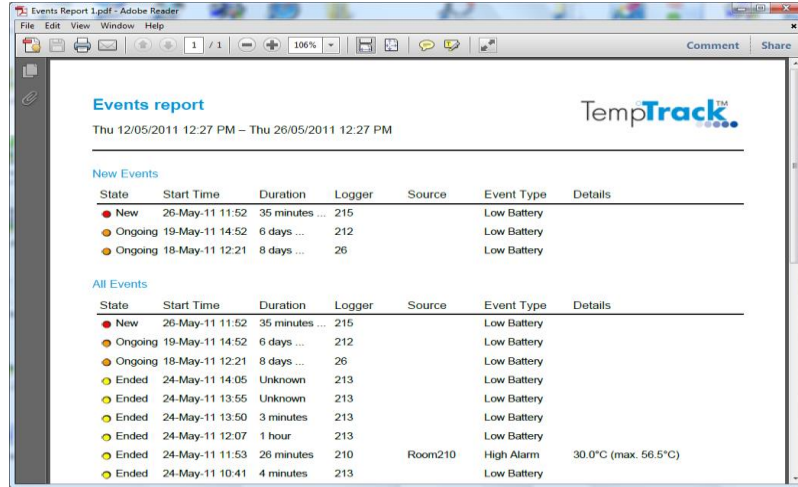
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View Charts

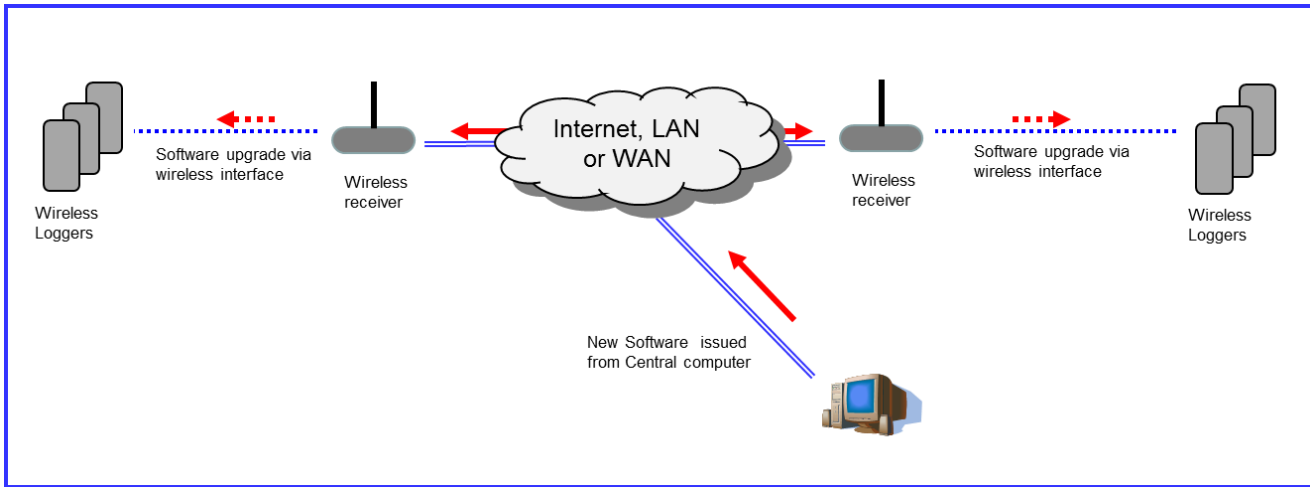


WIRELESS TEMPERATURE MONITORING SYSTEMS

Reports



8 Remote Upgrade Capability



The TempTrack® logger is “future proof” as any new requirement can be programmed and loaded into the logger without the need to replace the hardware infrastructure.

Potential new standards, change in standards or new functionality can be implemented in all loggers. Retrofit cost is eliminated with the remote upgrade capability which enables loading of the new software program over the wireless interface from the computer.

WIRELESS TEMPERATURE MONITORING SYSTEMS

9 Technical Specification

Technical Specification	
Temperature range	-55°C to +125°C
Accuracy	Standard: +/- 0.5°C over -10°C to +85°C Enhanced: +/- 0.2°C over -10°C to +85°C
Number of sensors	1 to 2 external temperature sensors; Optional internal temperature sensor; Optional humidity sensor; 2 digital input channels;
Sensor type	Factory calibrated digital thermometer
Sensor cable length	Up to 100m
Alarm limits	At 0.1°C step between -55°C to 125°C
Logging interval	User selectable from 10, 15, 20, 30 seconds; 1, 1.5, 2, 3, 4, 5, 10, 15, 30 mins; 1, 1.5, 2, 3, 4, 6, 8, 12, 18, 24 hrs
Out of range logging interval	User selectable from 10, 15, 20, 30 seconds; 1, 1.5, 2, 3, 4, 5, 10, 15, 30 mins; 1, 1.5, 2, 3, 4, 6, 8, 12, 18, 24 hrs
Alarm delay time	User selectable from 10, 15, 20, 30 seconds; 1, 1.5, 2, 3, 4, 5, 10, 15, 30 mins; 1, 1.5, 2, 3, 4, 6, 8, 12, 18, 24 hrs
Logging reference time	At any hour between 00:00 and 23:00
Memory size	Approx. 2000 data samples per sensor.
External casing	ABS plastic
Battery Type	3 x AA standard alkaline batteries
Physical Dimensions Wireless logger	100mm(wide) x 31mm(high) x 90mm(depth)
Communications Options	
Wireless Communications	Frequency : 2.4Mhz, IEEE, 802.15.4 Zigbee Standard
	Range : Indoor - Up to 100m, Outdoor - Up to 1km
	Output Power : 10mW
	Modulation : Direct Sequence Spread Spectrum